Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-20. (Cancelled)

Claim 21. (New) A method of detecting wind velocities using a Doppler-lidar system, said method comprising:

emitting a laser beam of a defined wavelength to a space area;

receiving light backscattered from the space area;

determining a Doppler shift by means of an interferometer which generates an interferogram; and

measuring an intensity distribution of the interferogram by means of a photodetector; wherein,

the intensity distribution is compared with a family of reference patterns which were previously determined for defined atmospheric parameters, which reference patterns comprise at least one of different densities and temperatures of the atmosphere;

the Doppler shift is determined as a measurement of the wind velocity, based on the comparison with the family of different reference patterns.

Claim 22. (New) The method according to Claim 21, wherein the interferogram is ring-shaped and is imaged directly on a two-dimensional photodetector.

Claim 23. (New) The method according to Claim 21, wherein the interferogram is strip-shaped and is imaged directly on a two-dimensional photodetector.

Claim 24. (New) The method according to Claim 21, wherein a reference pattern with the smallest deviation with respect to the measured interferogram is used to determine the Doppler shift.

Claim 25. (New) The method according to Claim 21, wherein the reference pattern contains the velocity of the atmosphere relative to the Doppler-lidar system as a parameter.

Claim 26. (New) The method according to Claim 21, wherein the variation of the velocity of the atmosphere relative to the Doppler-lidar system is determined from several successive measurements.

Claim 27. (New) The method according to Claim 21, wherein:

the laser beam is pulsed; and

a portion of a laser pulse is in each case used for defining a time-related reference point in order to determine the distance of the backscattering space area by means of the transit time of a residual portion of the laser pulse.

Claim 28. The method according to Claim 21, wherein:

a portion of the laser beam is received and recorded directly and without backscattering; and

from the intensity distribution, a transfer function of optical components is determined or a calibration is carried out.

Claim 29. (New) The method according to Claim 21, wherein at least one density and temperature of the space area is determined based on the reference pattern with a smallest deviation with respect to the measured interferogram.

Claim 30. (New) The method according to Claim 21, wherein the method is implemented on board a moving system.

Claim 31. (New) The method according to Claim 21, wherein an expected intensity distribution of the reference pattern is computed from at least one of measured atmospheric parameters and flight parameters of an airplane.

Claim 32. (New) The method according to Claim 21, wherein the laser beam is emitted in different directions in order to determine the wind velocity vector by measuring the Doppler shift in said different directions.

Claim 33. (New) A Doppler-lidar system for detecting wind velocities, said system comprising:

a transmitting device for emitting a laser beam;

a receiving device for receiving light including the laser beam backscattered in the atmosphere;

an interferometer for generating an interferogram from the backscattered laser beam;

a photodetector for determining an intensity distribution of the interferogram, which is imaged directly on the photodetector; and

an analyzing unit for determining a Doppler shift as a measurement of the wind velocity of the atmosphere; wherein,

the analyzing unit has a memory that contains a family of reference patterns associated with previously defined atmospheric parameters which comprise at least one of different densities and different temperatures of the atmosphere; and

a comparison unit is provided which determines the wind velocity from a comparison of the imaged interferogram with the family of reference patterns.

Claim 34. (New) The Doppler-lidar system according to Claim 33, wheein the photodetector is a two-dimensional photodetector which comprises an image intensifier and one of a CCD and a CMOS array.

Claim 35. (New) The Doppler-lidar system according to Claim 33, wherein a transfer path for a portion of the laser beam is provided between the transmitting device and the receiving device in order to record the generated laser beam directly in the receiving device.

Claim 36. (New) The Doppler-lidar system according to Claim 33, wherein the interferometer is a Fabry-Perot interferometer which generates ring-shaped interference patterns.

Claim 37. (New) The Doppler-lidar system according to Claim 33, wherein the interferometer is a Fizeau interferometer which generates strip-shaped interference patterns.

Claim 38. (New) The Doppler-lidar system according to Claim 33, wherein the transmitting device comprises a laser which generates pulsed laser beams in the UV range.

Claim 39. (New) The Doppler-lidar system according to Claim 33, further comprising field-programmable gate arrays for computing the reference patterns.

Claim 40. (New) The Doppler-lidar system according to Claim 33, wherein the analyzing unit comprises a module for determining the transfer function of components on the reception side of the Doppler-lidar system.

Amendments to the Abstract:

Please amend the Abstract of the Disclosure as submitted herewith on a separate unnumbered page.